

## A NEW SPECIES OF *DICALLANEURA* BUTLER (LEPIDOPTERA: LYCAENIDAE: RIODININAE) FROM PAPUA NEW GUINEA

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### Abstract

*Dicallaneura tennenti* sp. n., from Western Province, Papua New Guinea, is described and illustrated. Characters are provided to distinguish it from the sympatric *D. ribbei* Röber, *D. hyacinthus* Toxopeus and *D. pulchra* (Guérin-Méneville).

### Introduction

Parsons (1998) recorded nine species of *Dicallaneura* Butler from Papua New Guinea and a further five species from Indonesian West Papua. Toxopeus (1944) described additional species and subspecies from Indonesian West Papua, although some of these are regarded as synonyms (G. Lamas unpublished checklist). Parsons (1998) noted that 'members of *Dicallaneura* usually exhibit marked sexual dimorphism in their uppersides, although their undersides may be used to effectively associate the two sexes.' Both present authors have examined numerous specimens of all the species of *Dicallaneura* from Papua New Guinea and concur with Parsons' observations. We collected a single male and a single female of an undescribed species from two different localities but, given their facies and the fact that the two localities are within 15 km of each other, they are clearly the same species. This new taxon is described here.

### *Dicallaneura tennenti* sp. n.

(Figs 1-7)

*Types.* Holotype ♂, PAPUA NEW GUINEA: Matkomrae (Matkomnai) Catholic Mission, 50 km NNW of Kiunga, W.P., 5°49'S 140°9'E, Alt. 60 m, 6.x.1993, R.B. Lachlan (in Australian National Insect Collection, Canberra – Reg. No. 31-023121). Paratype ♀, PAPUA NEW GUINEA: 15 km NNE of Rumginae, Western Province, 80 m, 7.iii.2008, C.J. Müller (in Natural History Museum, London).

*Description.* Male (Figs 1-2). Forewing length 21 mm. Antenna with dorsal surface black, ventral surface with thin, white segmental bands, club elongate, tip orange-brown. Dorsal surface of thorax and abdomen dark brown, ventral surface creamy pale brown. Hindwing shape typical of *Dicallaneura*, pronounced between veins CuA<sub>1</sub> and CuA<sub>2</sub>. Upperside ground colour unicolourous very dark brown; forewing slightly darker with four white, slightly elongated spots suffused with dark grey-brown scales in subapical region in spaces between veins R<sub>5</sub> and CuA<sub>1</sub>, largest spot below vein R<sub>5</sub>, smallest above vein CuA<sub>1</sub>; basal area of inner margin of hind wing pale creamy-brown. Forewing underside ground colour dark brown on anterior half and terminal areas, with slight bluish tinge in central area, an



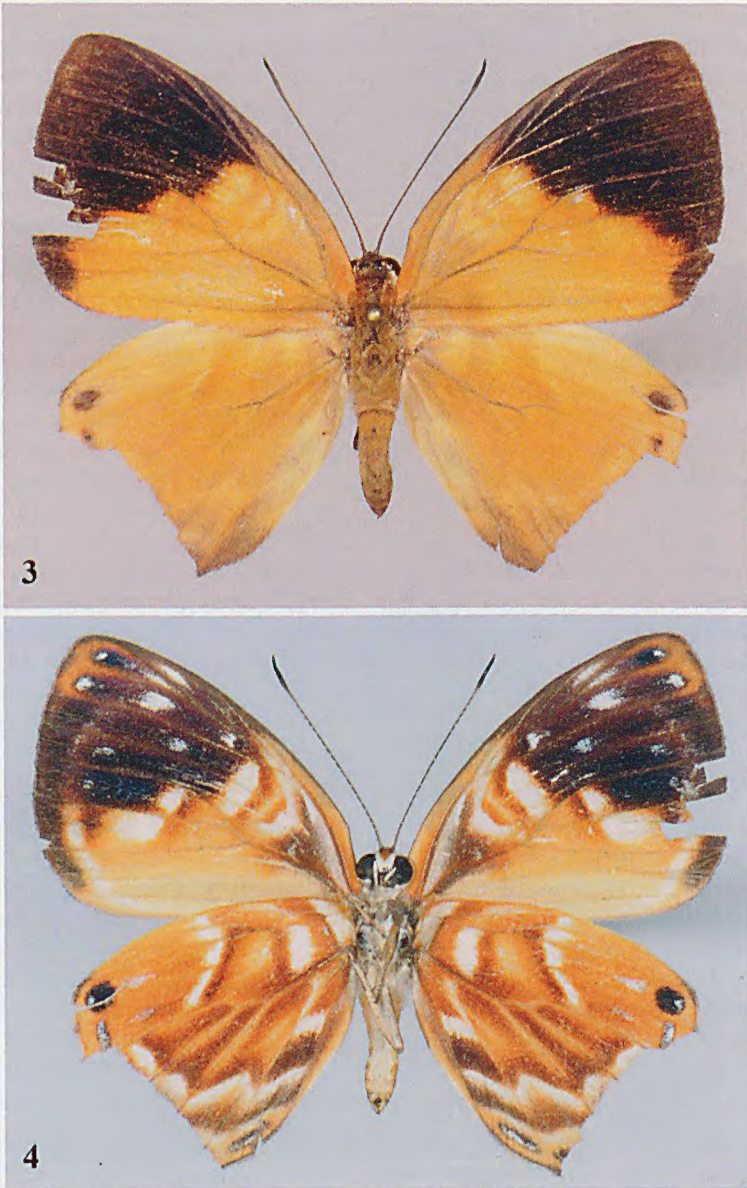
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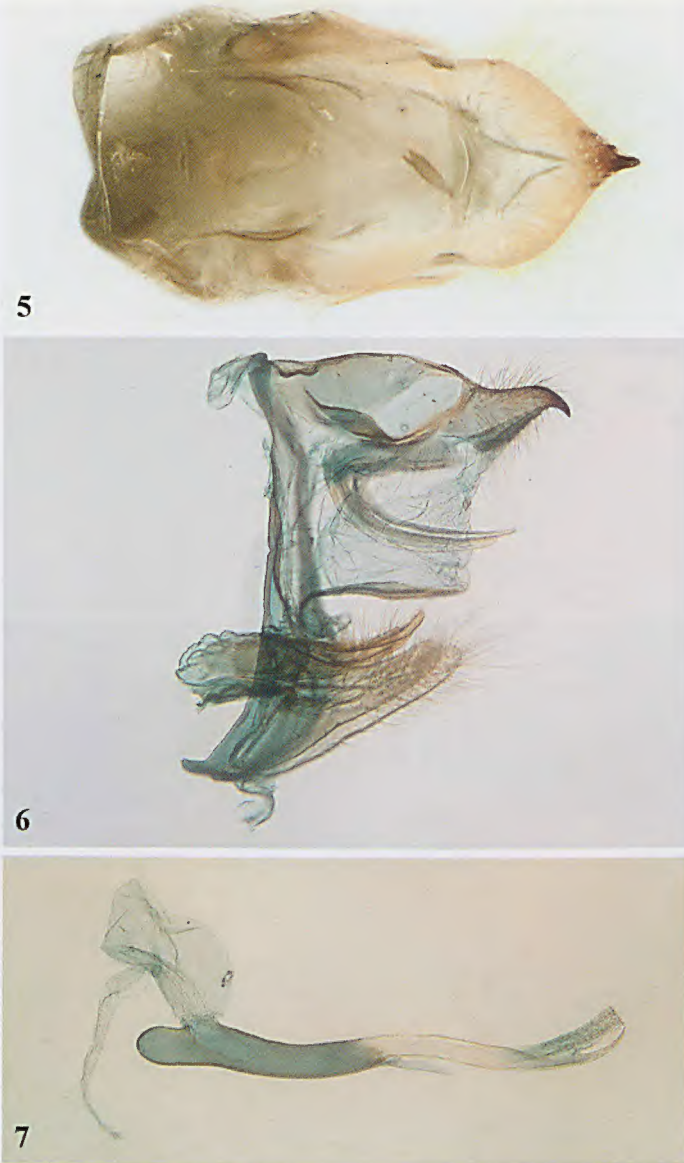
Figs 1-2. *Dicallaneura tennenti* sp. n., holotype male: (1) upperside; (2) underside.

orange-brown patch mostly below vein  $CuA_1$  to mid point of cell above vein  $1A+2A$ , two whitish spots at distal edge of patch, the uppermost small and triangular, the lower and larger spot between veins  $CuA_1$  and  $CuA_2$  almost rhomboid in shape; below this patch to dorsum light greyish-brown. Basal



**Figs 3-4.** *Dicallaneura tenmenti* sp. n., paratype female: (3) upperside; (4) underside.

area of costa with thin, pale cream and orange-brown streak, close and parallel a second whitish streak of similar length; from mid point of costa a small, prominent, cream, basally curved thin bar crosses the discal cell to cubitus, distally inside this curved bar is a small, thin, orange-brown mark



**Figs 5-7.** *Dicallaneura tennenti*, genitalia of holotype male: (5) dorsal view of tegumen and uncus; (6) lateral view with aedeagus removed; (7) lateral view of aedeagus.

then a larger, cream elongated spot curved inwardly on its basal edge; in the dark central patch are four small spots, three in an oblique line from near the costa to the subterminal region of the cell between vein  $M_3$  and  $CuA_1$ , the

costal spot whitish, the remaining three spots bluish-white; a thin, slightly curved outwardly, subapical and subterminal line of whitish spots, absent between veins  $M_3$  and  $CuA_1$ , from costa to inner margin; near the apex between the veins are two small, slightly elongate bluish-white spots, inwardly acute, rounded outwardly, with a black spot in the middle of the uppermost spot, both surrounded by a thin line of orange-brown scales more pronounced at their distal edge.

Hindwing underside ground colour orange-brown; base with prominent cream streak; a small crescent-shaped marking near costa, curved basally across discal cell; a small, less distinct cream spot distal of crescent marking; above this spot a small streak at and parallel to costa; an irregular, broken, cream marking from mid point of costa to vein  $M_3$ ; below cell four thin, elongated creamy-orange streaks, partly along veins  $M_3$  down to  $1A+2A$  in discal region; a darker brown, distally curved, irregular, thin subternal band between veins  $CuA_1$  and  $3A$  that is vestigial between veins  $CuA_1$  and  $M_3$ ; the brown band edged distally by a wider cream band between veins  $CuA_1$  and  $3A$  and basally by a similar width cream band from veins  $M_3$  to  $3A$  that spikes sharply basally in the cell between veins  $1A+2A$  and  $CuA_2$ ; two black terminal spots in the cells between veins  $M_1$  and  $M_2$  and veins  $CuA_1$  and  $CuA_2$ , both with silver-blue scaling on their outer edges; two thin, silver-blue bars between veins  $M_2$  and  $CuA_1$  and two more between veins  $CuA_2$  and  $3A$ , all edged lightly with black scales; two small, parallel, silver-blue streaks, the larger adjacent to the apical black spot and the smaller in the cell between veins  $M_2$  and  $M_3$ .

Male genitalia (Figs 5-7). In dorsal view, tegumen and uncus combined twice as long as broad; uncus setose, in lateral view with sharp, apical, ventral hook directed ventrally at  $45^\circ$ ; brachia relatively long, gently curved upwards along whole length, slightly wider basally then tapering to a fine point; saccus not prominent, angle between saccus and vinculum noticeably obtuse; valvae not large, relatively short, distal half narrow and clearly hirsute with some setae relatively long at distal margin, very slightly concave at mid point of ventral margin, dorsal margin slightly curved upwards, distally rounded; aedeagus in lateral view long, slender, almost parallel sided, slightly sinuate along middle two-thirds, distally tapering to a long, thin, slightly dorsally directed sharp point at apex; ductus seminalis close to rounded end of coecum.

Female (Figs 3-4). Forewing length 25 mm. Antenna similar to male, length 14.5 mm. Head above and anteriorly light orange-brown, beneath cream; eye ringed with white. Thorax and abdomen dorsally light orange-brown, ventral surface and legs similar to male. Wings similar in shape to male except termen more convex (tornal section of hind wing missing due to wing damage). Forewing upperside ground colour uniform light orange, apical area broadly dark brown, extending from midway along costa to junction of vein  $M_3$  with cell and across to tornus, boundary with ground colour

approximately parallel to termen but distinctly stepped at veins  $M_3$  and  $CuA_1$  and dark border reduced to 1.5 mm between veins  $CuA_2$  and  $1A+2A$ . Forewing underside very similar to male. Hindwing upperside ground colour as for forewing, costa and inner margin slightly paler orange, tornus along inner margin with light brown dusting, two subapical dark brown spots between veins near termen. Hindwing underside as in male.

*Etymology.* This new species is named after John Tennent, a long-standing scientific associate of The Natural History Museum, London. During his long and outstanding career in the field of entomology, he has published a large number of books and scientific papers and is regarded as a world authority on the butterflies of the Pacific Islands.

*Distribution.* At present, *D. tennenti* is known from only two specimens taken at two localities, approximately 15 km apart, north of Kiunga in Western Province, Papua New Guinea.

### Discussion

Although *D. tennenti* exhibits no sign of blue on its upperside, it most closely resembles three species of *Dicallaneura* recorded from Papua New Guinea: *D. ribbei* Röber, *D. hyacinthus* Toxopeus and *D. pulchra* (Guérin-Méneville). However, *D. tennenti* can be readily distinguished from *D. hyacinthus* as the latter species has a plain dark blue upperside and a darker underside pattern. Similarly, *D. ribbei* also has a plain upperside with an obvious blue sheen and constant differences in its underside maculation when compared with *D. tennenti*. The third species, *D. pulchra* (Figs 8-11), has a distinctive whitish-blue, oblique bar across the forewing in males. More than 70 males of *D. pulchra* were examined and none showed any significant variation in the width, length and shape of this character. *Dicallaneura tennenti* clearly differs by having four white, slightly elongated spots in the subapical region of the forewing, a character not seen in any other species of *Dicallaneura*.

Comparison of the underside maculation of *D. tennenti* with that of *D. pulchra* revealed several differences. In *D. tennenti* the forewing termen is slightly straighter and the small, nearly straight, oblique, pale orange-brown bar between the two basally curved cream markings near the costa is more prominent. The cubitus vein at the base of the discal cell is without the clear streak seen in the vast majority of *D. pulchra* specimens examined. The small triangular spot seen in *D. pulchra*, just above the cubitus vein in the discal cell, is absent in *D. tennenti* but the small, whitish postmedian spot between veins  $M_3$  and  $CuA_1$  seen in *D. tennenti* is not evident in *D. pulchra*. On the hind wing, the median, cream, broken oblique line from the costa to vein  $M_3$  is reduced in *D. tennenti* but larger and clearly crescent shaped in *D. pulchra*. The dark brown, thin subternal band in *D. tennenti* largely terminates at vein  $CuA_1$  but in *D. pulchra* it clearly extends to vein  $M_3$ . The underside cream markings of *D. tennenti* are noticeably whiter in *D. pulchra*.



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Figs 8-9. *Dicallaneura pulchra* male: (8) upperside; (9) underside.

*Dicallaneura pulchra* was described from a single female (Guérin-Ménéville 1830-1838), although Parsons (1998) referred to a 'holotype male'. The location of this type is unknown but the diagnostic characters of the species are clearly evident in the original illustrations [pl. 16, figs 2-3].



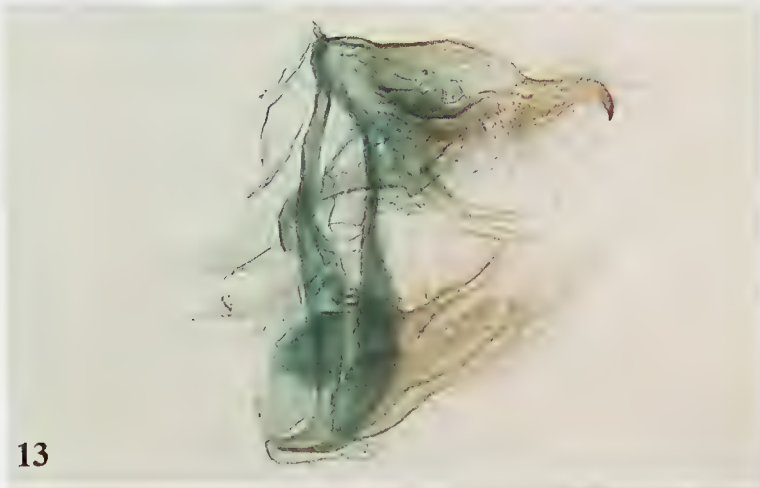
**Figs 10-11.** *Dicallaneura pulchra* female: (10) upperside; (11) underside.

The male genitalia of *D. tennenti* (Figs 5-7) differ from those of *D. pulchra* (Figs 12-14) and *D. ribbei* in dorsal view, in having a much longer and narrower tegumen and uncus combined, as seen in Fig. 5. In *D. pulchra* the uncus is shorter with a more protruding tip (Fig. 12). In lateral view, the tip

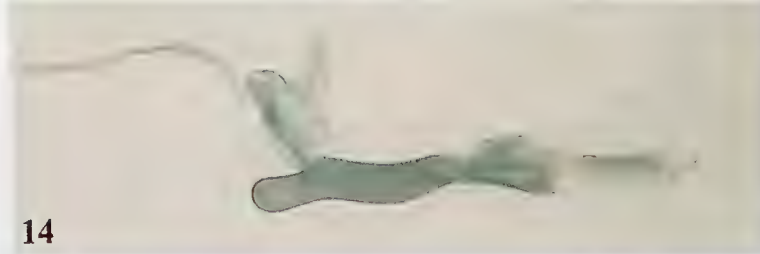




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**Figs 12-14.** *Dicallaneura pulchra* male genitalia: (12) dorsal view of tegumen and uncus; (13) lateral view with aedeagus removed; (14) lateral view of aedeagus.

of the uncus is clearly more ventrally directed than in *D. tennentii*. A significant character seen in *D. pulchra* is the unusually dense, long setae covering the uncus and valvae; this is also evident on *D. tennentii* but the

setae are shorter and less dense. The brachia in *D. tennenti* are longer than in *D. pulchra* and the saccus appears less developed with a more sloping angle between the saccus and vinculum than seen in *D. pulchra*. The valvae in *D. pulchra* are basally more bulbous than in *D. tennenti*, while in the aedeagus the ductus seminalis is slightly further away anteriorly from the coecum than in *D. tennenti* and tapers to a shorter, thicker point.

The female of *D. tennenti* is almost identical to that of the male on the underside. The upperside is similar to that of females of several other *Dicallaneura* species, being light orange with a broad apical border on the forewing. When compared with the female of *D. pulchra*, *D. tennenti* has slightly more extensive orange on the forewing and is a paler orange.

A clear difference seen in both males and females of *D. tennenti* is found in the postmedian cream band between veins  $M_3$  and  $3A$ , basad of the thin dark brown line. Between veins  $1A+2A$  and  $CuA_2$  this cream band spikes sharply basally, a condition not seen in either *D. pulchra* or *D. ribbei*. The male forewing of *D. tennenti* (21 mm:  $n = 1$ ) is slightly larger than either *D. ribbei* (19.5-20.5 mm:  $n = 6$ ) or *D. pulchra* (18.5-19 mm:  $n = 4$ ).

In the vicinity of Kiunga, including the site for the paratype female of *D. tennenti*, several other *Dicallaneura* taxa were recorded by the authors, namely *D. decorata* (Hewitson), *D. kirschi* Röber, *D. hyacinthimus*, *D. ribbei* and *D. pulchra*. The female specimen of *D. tennenti* was taken as it alighted on foliage above a steep, shallow ravine about four metres above the ground.

Several *Dicallaneura* taxa are known from just a few specimens from widely disjunct localities. It is therefore likely that the new species has a wider distribution in mainland New Guinea.

### Acknowledgements

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